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The Impact of the National EMS Curriculum in Florida's EMT-B Educational Programs

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The Impact of the National EMS Curriculum in Florida's EMT-B Educational Programs

By

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ABSTRACT

ILIA Y. MATOS: The Impact of the National EMS Curriculum in Florida's EMT-B Educational Programs

The Florida EMS Program Office has implemented state-mandated changes to the EMT-B curriculum, which embed the development of critical thinking skills for students and the requirement of hiring faculty with degrees to teach courses. This is the first and only qualitative study to be conducted in Florida after the 2009 changes to the EMS rules, which mandated that instructors teaching EMT-B courses hold at least a 2-year degree from an institution whose accreditation is recognized by the United States Department of Education (S. Res. 64J-1.012, 2008).

This study sought to verify how effective the curriculum is being delivered by credentialed and professionally experienced faculty in the field of EMS. The research question was replicated from a national study conducted in 2006, which yielded responses that specifically generated educational strategies for EMT-B programs. This study used Cheng's (1994) structure of curriculum effectiveness as its theoretical framework. This model incorporates the constraints of preexisting characteristics, such as national and state goals as well as educational technology and resources.

The use of the nominal group technique in this focus group facilitated the identification of five top strategies that yield highly successful EMT programs in Florida. Two of the five top strategies identified by the Florida participants were similar to strategies identified by program representatives of the 2006 research focus group. Both groups

acknowledged the importance of a strong relationship between student and instructor and emphasized consistency in curriculum delivery through instructors with a combination of proper academic credentials and field experience.

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DEDICATION

I dedicate this dissertation to my mom and dad. I owe all that I am to you. You have always respected my decisions, without doubt or hesitation. You have trusted me by giving me love, teaching me how to persevere, and showing me how to respect without judgment. You have rewarded me with a strong educational foundation and sense of responsibility. (Dad always said, "No one can take away your education.")

I will miss my father on the day that, for the first time, I am called "Doctor Matos." He will be watching from heaven with a big smile and an incredible sense of pride.

My mother is my best friend, my confidant, and my rock. These three years have been quite eventful with many trials and tribulations. Through them all, you have been by my side. Te quiero mucho, Mami.

I share this accomplishment with my sister, Idanny. Through the thick and thin, I came through for you, and you have been there for me. I hope you are as proud of me as I am of you.

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CHAPTER I: Introduction

Purpose of the Study

Effective components of quality emergency medical services (EMS) education have emerged during the last 30 years, including national standard EMS curricula, accreditation standards, and a national registration system (National Highway Traffic and Safety Administration [NHTSA], 2000, p. 5). In response to technological advances and changes in societal expectations, education is expected to emphasize high-level cognition, problem solving, and the ability to deal with ambiguity and conflicting priorities. The public and employers demand that health care education produce graduates who are responsive to the needs of the patient, have excellent communication skills, and are able to adapt to changes in their responsibilities (NHTSA, 2000, p. 18).

Limited studies and research on the effectiveness of the delivery of EMS curricula hinders the ability to hire good instructors, adopt the correct level of academic freedom in the classroom, and measure students' outcomes based on what the public and employers are demanding of pre-hospital care professionals. EMS education curricula do not include adequate research-related objectives. EMS in the United States is at a crossroads. As a community, we are definitely polarized with our vision: Do we want EMS to be reactive or proactive (Kirkwood, 2011)? Each adjective defines a differently delivery of curriculum.

Recently, President Obama praised partnerships that colleges are building with future employers through apprenticeships and on-the-job training programs. President Obama's call in the State of the Union Address to close the skills gap in education is already being heeded by community colleges around the country as they forge closer ties

with local industry to design certificate and degree programs as well as apprenticeships (Mangan, 2013). If we are to follow Obama's vision, a proactive curriculum delivery approach will place the EMS education agenda into a competency-based, hands-on, real-life student learning experience.

The main purpose of this study was to identify which educational elements make emergency medical technician-basic (EMT-B) programs successful. This researcher replicated a national qualitative study conducted in 2006 to categorize elements that make EMT-B programs effective in the state of Florida. This was the first study conducted after the implementation of the national EMS core curriculum and changes to the Florida statutes and administrative codes regulating EMS programs in the state. The State of Florida EMS Program Office recognizes that very few EMS personnel have a sufficient baseline understanding of the role of EMS research. Improving the quality and quantity of research in the field of pre-hospital care is critical to the continued improvement of patient care, training of practitioners, and evolution of the EMS profession in the state of Florida (NHTSA, 1996; Sikka & Margolis, 2005).

Nature of the Problem

The worldwide definition of *emergency care* traditionally implies the rapid and appropriate care of victims of traumatic and medical emergencies (Sikka & Margolis, 2005). *EMS* can be defined as a comprehensive system which provides the arrangements of personnel, facilities, and equipment for the coordinated and timely delivery of health and safety services to victims of sudden illness or injury. The actual practice of emergency care is as old as medicine itself. However, wherever it exists as a specialty, it is very young (Chung, 2001). Although emergency care represents a relatively small part

of any country's health care system, citizens in many modern societies have come to expect, and sometimes demand, an organized system to manage medical and traumatic emergencies (Sikka & Margolis, 2005).

According to the NHTSA (2000), the rationale for the continued use of standardized curricula in the delivery of programs (which depend on a standard national certification test) seems logical. Unfortunately, standardized curricula do not account for differing instructors, resources, or students. In EMS, outcome measurements still vary widely based on state-mandated minimum curriculum hours, despite the requirement that programs adhere to standardized curricula (NHTSA, 2000). Without a competent instructional staff, the delivery of the curriculum will not be effective. Before embracing equal outcomes as the educational goal to be achieved, educators and policymakers should spend some time analyzing and discussing the outcomes they want to equalize. Success for one student may be different from success for another (Noddings, 2012).

Implementation of the EMS national curriculum began with the revision of the EMT-B curriculum in the state of Florida. The Florida EMS Program Office and training program directors have implemented state-mandated changes to the EMT-B curriculum, which embed the development of critical thinking skills for students and the requirement of hiring faculty with degrees to teach courses. This change in curriculum effectiveness versus curriculum delivery is new to this field. Therefore, the need to assess the effectiveness of the changes—with a focus on faculty—is critical in the state of Florida. Recruitment and retention of qualified instructors with teaching experience is a constant challenge for EMS systems (Institute of Medicine of the National Academies, 2007). Administrative rule changes focused on faculty credentials and experience as pre-hospital

care professionals by requiring earned academic degrees and a number of professional experiences. Academic credentials and experience in the field currently define which courses EMS instructors can teach. Instructor training for EMS faculty is now required prior to teaching in the classroom.

With state-mandated changes to the EMS training programs, it is anticipated that several institutions licensed by the Florida EMS Program Office and the Commission for Independent Education will cease operations due to the high cost of accreditation. The state anticipates a rise in national pass rates as a result of a more demanding curriculum and faculty trained with standard delivery methods.

Research Questions

Good methodology requires that information from one source be tested against information from other sources (Weiss, 1998). This researcher sought to verify how effective the curriculum is being delivered by credentialed and professionally experienced faculty in the field of EMS. This researcher replicated a research question utilized in a national study conducted in 2006, which yielded responses that specifically generated educational strategies for EMT-B programs (Margolis, Studnek, Fernandez, & Mistovich, 2008). Two important changes generated from the study were (a) revisions to the national EMT-B curriculum and (b) the introduction of faculty academic and experiential requirements for EMT-B and paramedic programs. This investigation sought to answer the following research question: What are specific strategies that lead to a successful EMT-Basic educational program?

The 2006 study with 15 participants from institutions in the United States identified strategies employed by high-performing programs to maintain, and in some

cases improve, first-attempt pass rates on the National EMT-B Certification exam (Margolis et al., 2008). Data collected from the 2006 study employed the nominal group technique (NGT). This researcher replicated the use of the NGT, a focus group utilizing a structured format with the aim of reaching a consensus of opinion. The implementation of the national EMT-B curriculum triggered changes to state administrative rules that regulated the approval of EMT-B training programs.

Theoretical framework. This study used Cheng's (1994) structure of curriculum effectiveness as its theoretical framework because, in part, this model incorporates the constraints of preexisting characteristics, such as national and state goals as well as educational technology and resources at the school, state, and national levels (Cheng, 1994). This study was conducted after the implementation of changes to a standard curriculum that culminated with a national certification exam. The exam was the outcome that measured the effectiveness of the EMT-B program.

Education effectiveness in the classroom is a comprehensive concept, even though it is often assessed by the quality and quantity of student learning experiences and outcomes. Cheng's (2001) concept of effectiveness in teaching and learning argues that the key internal factors—teacher, curriculum, contextual factors, and student factors—are related to student learning experiences and educational outcomes. It assumes the following procedural interrelationships among the components of internal education effectiveness.

1. Student learning outcomes are the product of the interaction between curriculum characteristics, student learning experience, and individual characteristics.

2. Student learning experience is affected by teacher performance, curriculum characteristics, and classroom environment.
3. Teacher performance is determined by the interactions among teacher competence, curriculum characteristics, and school organizational environment.
4. External teacher education, school-based teacher education, and preexisting teacher characteristics can contribute to teacher competence.
5. Teaching evaluation is based on the information from teacher performance, student learning experience, and learning outcomes; it can be used to facilitate the development of teacher competence through staff development activities. (Cheng, 1998; Medley, 1982)

Background of the Study

Higher education institutions offer an array of educational training to the masses. They encompass vocational training, polytechnics, colleges, graduate schools, universities, postgraduate schools, and distance education. This answers the desire for diversified knowledge and skills in service for public and private interest (van Tilburg, 2002). It is now increasingly difficult to understand education in any context without reference to the global forces that influence policy and practice (Apple, 2001). In order to protect students and taxpayers, the industry has taken steps to reform and do a better job serving students so its colleges can meet basic standards (Bidwell, 2013).

The State of Florida EMS Program Office is enforcing new statutes and administrative codes, which became effective on September 2, 2009. A second revision to the administrative rules became effective May 27, 2010. Certification and licensure requirements, according to § 64J-1.008 and § 64J-1.009 of the Florida Administrative

Code list the National EMS Curriculum as the program training requirement in order to become eligible to sit for the national licensing exam (Emergency Medical Services, Florida Administrative Code § 64J-1, 2008). The State of Florida has designed mandatory requirements and qualifications for EMS instructors. Among the requirements, which are enforced by the Bureau of Emergency Medical Services, are academic credentials levels for administrators and faculty and prescribed instructional training (as identified in the *2002 National Guidelines for Educating EMS Instructors*; Emergency Medical Services, Florida Administrative Code § 64J-1, 2008).

The Committee on Accreditation of Educational Programs for the Emergency Medical Services Professions (CoAEMSP), an accrediting body operating under the Commission on Accreditation of Allied Health Programs (CAAHEP), published new standards and guidelines in 2007. As of July 2012, CAAHEP has granted programmatic accreditation to 24 institutions in the state of Florida that offer a paramedic program (CAAHEP, n.d.). CAAHEP has not developed accreditation standards for EMT-B programs.

Definition of terms. For the purposes of this study, the researcher applied the following definitions.

Certification. Certification is the issuing of a certificate by a private agency based on standards adopted by that agency; standards are based on competency (NHTSA, 2000).

Lead instructor. According to the State of Florida, EMS administrative rules, the terms *lead instructor* and *program coordinator* will be used interchangeably in this study (Emergency Medical Services, Florida Administrative Code § 64J-1, 2008).

Licensure. Licensing is generally viewed by legislative bodies as a regulatory effort to protect the public from potential harm. In the health care system, an individual who is licensed tends to enjoy a certain amount of autonomy in delivering health care services (NHTSA, 2000).

Significance of the Study

While there has been a fair amount of research investigating paramedic education, there is very limited research investigating EMT-B education and the effect that length of EMT-B certification may have on future EMS education (Fernandez, Studneck, & Cone, 2009). One measure of EMT-B educational program effectiveness is first-attempt pass rate on the national certification exam (Margolis et al., 2008).

This study is the first attempt in the state of Florida at measuring and assessing the implementation of recommendations made by EMT-B program coordinators and directors, who identified high-performing EMT-Basic courses and programs (as published in 2008 by the National Registry of Emergency Medical Technicians [NREMT]). This is the first and only qualitative study to be conducted in Florida after the 2009 changes to the EMS rules, which mandated that instructors teaching EMT-B courses hold at least a 2-year degree from an institution whose accreditation is recognized by the United States Department of Education (S. Res. 64J-1.012, 2008). New data in the Florida will aim at giving EMT-B program coordinators and directors additional tools to improve their curriculum delivery and, ultimately, raise its first-attempt pass rates on the NREMT national certification exam.

Study delimitations. This study focused on curriculum effectiveness based on the conceptual framework of Yin Cheong Cheng (1994). Cheng placed the instructor as

the main researcher of learning experiences and producer of expected educational outcomes. The qualitative study conducted in 2006, which involved the participation of high-performing EMT-B education program coordinators and administrators, focused on curriculum delivery. This study focused on Florida EMT-B programs only.

Summary

Chapter 1 provided a brief overview of the study's purpose: The examination of factors that contribute to effective, high-performing EMT-B programs. Chapter 2 reviews the literature on the history of pre-hospital care programs, beginning with the development of a curriculum to train EMTs. This chapter also includes literature on outcome-based curricula; theories of curriculum change are examined. Chapter 3 details the research methodology used in the study. Chapter 4 describes the results and analysis of the study using the NGT focus group technique. Chapter 5 concludes with a summary of the results and recommendations for further research, based on the results of this study.

CHAPTER II: Literature Review

For the purpose of this study, the literature reviewed included the emergence of pre-hospital care educational programs. In addition, an overview of outcome-based and student-centered curricula was provided. Theories of curriculum change were also presented in this chapter.

Overview of the Emergence of Pre-Hospital Care Educational Programs

In the mid-1950s, the American College of Surgeons developed the first training program for ambulance attendants. In 1969, the Highway Safety Bureau (later the NHTSA) came into existence. Dunlap and Associates began the development of a curriculum to standardize ambulance attendant training (EMT-Ambulance; NHTSA, 2000).

In 1969, President Lyndon Johnson's Committee on Highway Traffic Safety recommended the creation of a national certification agency to establish uniform standards for training and examination of personnel active in the delivery of emergency ambulance services. The result of this recommendation was the inception of the NREMT in 1970. In 1989, the EMT-B curriculum and exam category were established, combining EMT-Ambulance and EMT-Non-Ambulance courses and concepts (NHTSA, 2000; NREMT, n.d.).

In 2007, National Association of State EMS Officials membership voted to require that all paramedic (EMT-P) education programs be nationally accredited by January 1, 2013 in order for graduates of these programs to be eligible to take the NREMT exams—EMT-B, EMT, or paramedic exam. In 2010, the National Association of State EMS Officials membership voted to support CAAHEP as the national EMS

programmatic accrediting agency. The review of programs seeking accreditation is based on the CAAHEP *Standards and Guidelines for Educational Programs in the Emergency Medical Services Professions*. At the present time, programmatic accreditation for EMT-B courses or programs is not required in order for graduates to be eligible to take the NREMT EMT-B national certification exam. However, faculty teaching EMT-B or EMT-P courses must have, at a minimum, an earned 2-year degree and all applicable certifications.

The EMT-B curriculum is a core curriculum of minimum required information to be presented within a 110-hour training program. This curriculum is intended to prepare a medically competent EMT-B-trained individual to operate in the field (NHTSA, 1994). EMT-B (formerly EMT-Ambulance)-trained individuals serve as a vital link in the chain of the health care team. It is recognized that the majority of pre-hospital emergency medical care will be provided by EMT-B-trained individuals. This includes all skills necessary for the individual to provide emergency medical care at a basic life support level with an ambulance service or other specialized service. Specifically, after successful completion of the courses, the student will be capable of performing the following functions at the minimum entry level:

- recognize the nature and seriousness of the patient's condition or the extent of injuries to assess requirements for emergency medical care;
- administer appropriate emergency medical care based on assessment findings of the patient's condition;
- lift, move, position, and otherwise handle the patient to minimize discomfort and prevent further injury; and

- perform safely and effectively the expectations of the job description (NHTSA, 2007).

Figure 1 represents the flow of the curriculum (NHTSA, 1994). The NHTSA recognizes that this information might differ from locality to locality and that each training program or system should identity and provide special training requirements.

The paramedic is an allied health professional whose primary focus is to provide advanced emergency medical care for critical and emergent patients who access the emergency medical system. Paramedics function as part of a comprehensive EMS response, under medical supervision. The paramedic is a link from the scene into the health care system (NHTSA, 2007). Accredited paramedic programs are sponsored by colleges, universities, hospitals, clinics, medical centers, the U.S. armed forces, governmental educational or medical services, and by consortiums. At the present time, programs can vary in length and must include an appropriate sequence of classroom, laboratory, hospital, and field internship activities.

The State of Florida EMS Program Office is responsible for the statewide regulation of EMTs and paramedics, EMT and paramedic training programs, ambulance services, and ambulatory vehicles. Florida has two levels of certification for pre-hospital care providers: EMT-B and paramedic. Students are trained to a national standard to enter the workforce as an entry-level providers (Bureau of Emergency Medical Services, 2012). As of May 2014, there are 29 EMS programs accredited by CoAEMSP.

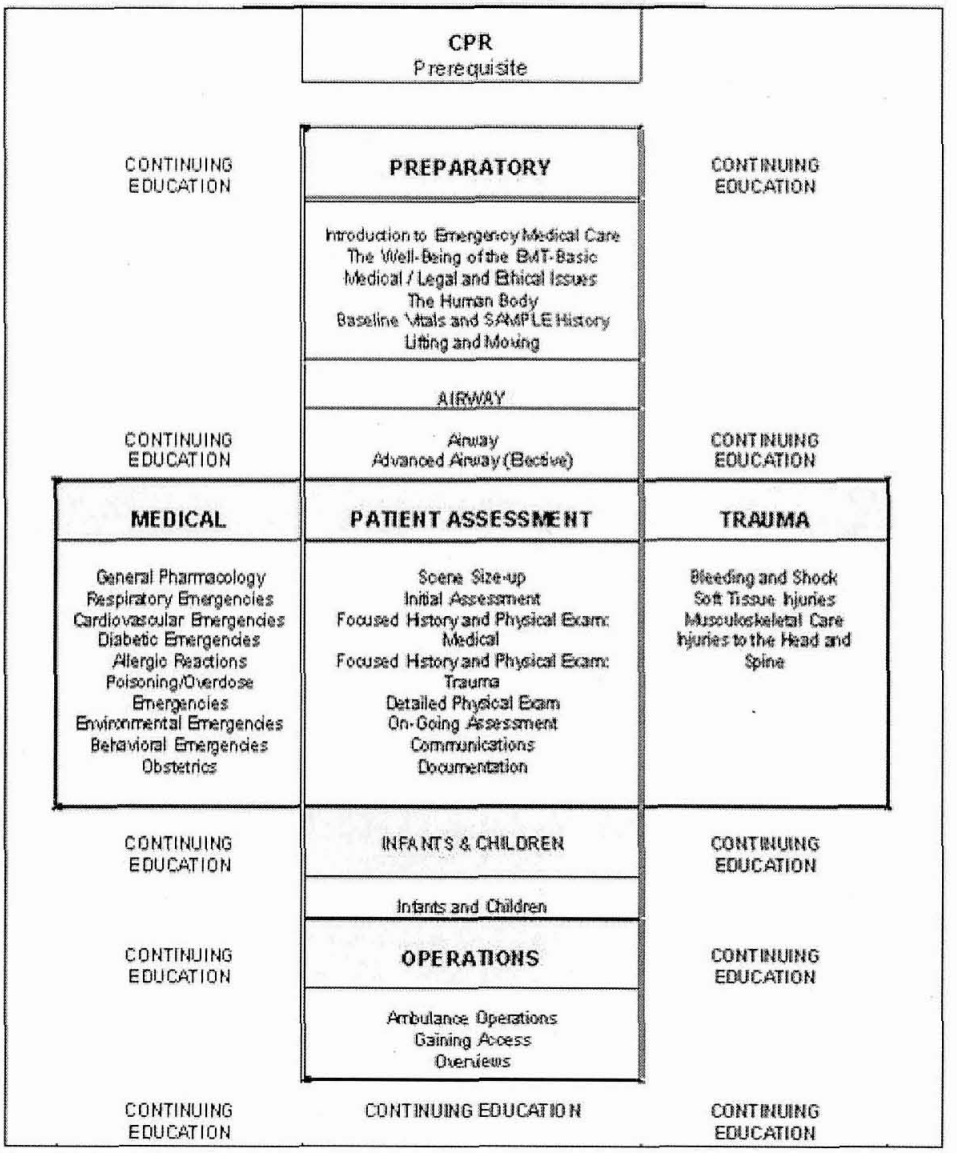

Figure 1. Diagram of the educational model of the EMT-B National Standard Curriculum. Adapted from *Emergency Medical Technician-Basic: National Standard Curriculum* (NHTSA, 1994, p. 4). Copyright 1994 by the U.S. Department of transportation.

Inception of the National EMS Curriculum. The functions of EMS can be categorized into four main components: accessing emergency care, care in the community, care en route, and cure upon arrival to receiving care at the health care facility (Al-Shaqsi, 2010). The care and transport of patients is often fragmented and

disorganized. The quality of EMS is highly inconsistent from one town, city, or county to the next. This crisis is multifaceted and impacts every aspect of emergency care—from pre-hospital EMS to hospital based emergency and trauma care (Institute of Medicine of the National Academies, 2007). Until now, there has not been a national system to aid states in the evolution of their EMS personnel scopes of practice and licensure.

In 1996, there were at least 44 different levels of EMS personnel certification in the United States. These individualized versions of licensure and certification created considerable problems, including, but not limited to, public confusion, reciprocity challenges, limited professional mobility, and decreased efficiency due to duplication of effort (NHTSA, 2007). The challenge facing the EMS community is to develop a system that establishes national standards for personnel licensure and their minimum competencies while remaining flexible enough to meet the unique needs of state and local jurisdictions. Such a system is the core of the reform, which was implemented in 2010. The new system of licensure offers the following benefits:

- establishes national standards for the minimum psychomotor skills and knowledge for EMS personnel;
- improves consistency among states' scopes practice;
- facilitates licensure reciprocity;
- improves professional mobility;
- promotes consistency of EMS personnel titles; and
- improves the name recognition and public understanding of EMS personnel (NHTSA, 2007).

In addition, the levels of licensure have been reduced to three.

In 2002, a study was performed by the National Association of EMS Educators and NHTSA to evaluate the development and training of EMS educators and the systems in which they work. A questionnaire was distributed to 5,000 EMS instructors randomly selected from a pool of 15,278 candidates representing all 50 states. It addressed three research questions:

1. Who are the EMS instructors today?
2. What is the state of the current EMS educational infrastructure?
3. What attributes should the future EMS instructor possess in order to design, organize, implement, and evaluate EMS instruction based on the education agenda standards? (Ruple, 2007)

The following recommendations were made based on study findings:

- National EMS education standards should include instructor guides and lesson plans.
- The EMS educator must be trained to use tools and resources to design and apply evaluation techniques to test students' critical thinking skills.
- Policy makers must promote, support, and facilitate substantial changes in instructor training.
- Policy makers and educational institutions should promote and assist with developing requirements for EMS educators to obtain and maintain state instructor certifications that include training in teaching techniques.

- EMS educators should promote, support, and demonstrate culture competency in teaching practices, and should recruit students that reflect diversity of the population.
- Policy makers should promote, support, and require national accreditation of EMS education programs in order to address concerns related to instructor preparation, teacher certification, course resources, and curriculum design. (Margolis et al., 2008; Ruple, 2007)

The results of this study have become the conceptual framework of the National EMS Curriculum and reforms to delivery requirements, including the inception of instructor training programs for EMT and paramedic training programs. There are two levels of instructor training programs for EMS instructors in the state of Florida.

Outcomes-Based Curriculum

Societal demands for pre-hospital care professionals who are able to anticipate and manage patients with complex conditions in an unpredictable, highly technological health care environment are increasing. To manage patients' complex needs, students must develop their abilities to acquire and process information. Students need to learn how to make appropriate patient care decisions based on assessment and planning, credible evidence, critical thinking, and clinical reasoning (Candela, Dalley, & Benzel-Lindley, 2006).

Curriculum has been defined by researchers as a specific set of knowledge, skills, and activities to be delivered to students. It may also be defined broadly as a set of planned activities to foster teachers' teaching and students' learning (Cheng, 1994). Learning begins with student engagement, which in turn leads to knowledge and

understanding. Once someone understands, he or she becomes capable of performance or action. Therefore, we must ensure that what is being assessed is compatible with what is being taught. The creation of rubrics for assessment, like the Bloom's taxonomy of educational objectives, has given educators a venue to connect and align teaching and assessment (Shulman, 2004). Another example of measuring learning with student engagement is competency-based learning. Already used by private institutions, competency-based models place an emphasis on personalization, flexibility, and learning-centered progression. They serve as a foundation for clear learning, expectations, well-designed curricular resources and assessments, and more personally focused instructional and advising support (Carlson, 2013). President Obama and the U.S. Department of Education have recently pressed colleges to prove their worth by proposing a federal rating system that would tie student aid to measures of learning outcomes (Stripling, 2013). For a program to improve student learning, three threads must be interwoven: shifting the curricular focus to student learning, developing faculty as effective teachers, and integrating assessment into the curriculum at several levels (Candela et al., 2006).

The massive reform efforts in the United States have been intended to address poor academic performance in order to deliver a better future for America and all Americans (Zhao, 2009). High academic standards are essential to good educational institutions, and such standards demonstrate a commitment to high expectations for all students (Meier, 2000). Intended outcomes serve as the basis for designing curricula, developing learning activities, documenting student learning, and evaluating program effectiveness (Candela et al., 2006).

It is believed that clear-cut expectations will produce greater effort, and effort is the key to learning (Meier, 2000). The outcomes must relate to entry-level skills required for employment leading to a degree, diploma, or certificate that is primarily aimed at job preparation. If a requirement for job entry is passing a licensing, certifying, or qualifying examination, then the knowledge and skills are defined by professional organizations (Nichols, 1995). Testing is a central part of teaching and of judging competence, which serves as the basis for awarding credentials (Olson, 2003). Cognitive and adaptive tests assess not only the student's performance, but also the effectiveness of the institution's educational programs (Nichols, 1995).

Standards-based reform systems are generally organized around a set of four interconnected mechanisms: (a) an official document (sometimes called a framework), (b) classroom curricula, (c) a set of assessment tools, and (d) a scheme of rewards and penalties directed at entities and individuals who fail to meet the standards (Meier, 2000). Problem-based pedagogies are pedagogies of engagement, understanding, performance, reflection, generativity, and commitment. Real problems in the classroom engage students (Shulman, 2004). In health education programs, incorporating interdisciplinary experiences in the classroom is important for the improvement of health care delivery and the reformed demands of the health care workforce. Recent changes to the curricula include the emphasis on core instruction through competencies (Stephenson, Peloquin, Richmond, Hinman, & Christiansen, 2002).

Curriculum Change

Higher education institutions offer an array of educational training opportunities to the masses. These include vocational training, polytechnics, colleges, graduate

schools, universities, postgraduate schools, and distance education. This answers the desire for diversified knowledge and skills in service for public and private interest. Learning is the main characteristic of social and economic change. There are a number of institutions and regulatory bodies governing information and decision-making (van Tilburg, 2002).

Traditionally, the discussion of education quality focuses heavily on the effectiveness of internal education processes, particularly teaching and learning in the classroom. In this line of thinking, education quality mainly refers to the achievement of planned education goals, particularly in term of students' educational outcomes. Courses in allied health programs involve two components: didactic and clinical. The didactic portion of the course consists of lectures, seminars, and case studies, culminating in paper-and-pencil examinations. The clinical portion of the course involves the direct interaction between the student and faculty member (or professional in the field). The student is observed and evaluated on how he or she applies the skills and knowledge with actual patients (Boley & Whitney, 2003). Student outcomes—test scores, grade point average, attrition, standardized assessment test scores, and NREMT national certification performance—serve as feedback loops, determining the effectiveness of the EMS education system (Carrick, 2011).

Higher achievement in planned education goals implies a better quality in education (Cheng, 2001). The changing educational environment, the diverse educational needs of students, the high expectations from the public, and the policy reports strongly demand educational change not only at the education system level, but also at the individual school level (Cheng, 1994). At times, schools have conflicting

goals. The school must meet its obligations to the larger society; it must also meet the needs of students as persons with their own rights and responsibilities (Olson, 2003). This resembles the current dilemma with EMS as a practical or academic profession. According to the U.S. Department of Education and the Council of Higher Education Accreditation, accreditation standards address the quality of a program in a variety of areas, including student achievement, curricula, faculty, facilities, equipment, supplies, fiscal and administrative capacity, student services, recruitment and admissions practices, measures of program length, and the objectives of the credential being conferred (Dickison, Hostler, Platt, & Wang, 2006). It has been widely accepted as the primary method for assuring the quality of higher education in the United States. It also serves a very important public interest: To assure a well-prepared and qualified workforce is available to provide health care services (Dickison et al., 2006). Change to a profession that has passed its hands-on knowledge through practical training will be and has been a challenge, both educationally and politically.

EMS education is believed to be a sound investment both for the individual and the nation (Phillips & Schweisfurth, 2006). This investment cycle creates change, and in order to successfully change, one must identify what the problem is in order to turn a perceived problem into a successful solution. Therefore, the problem must be identified and analyzed. Second, a hypothesis must be formulated, and the conditions to which the hypothesis applies must be specified. Third, one must predict the outcomes, and, lastly, the outcomes must be compared with the observable events (Gumbert, 1985).

Curriculum development, or change, aims to maximize the effectiveness of teaching and learning through change in planned content, activities, and arrangements for

educational processes (Cheng, 1994). Curriculum infusion cannot be attained and sustained without a carefully planned and strategic change process. In this instance, change is defined as garnering commitment from key stakeholders—faculty, academic administrators, students, and community partners—to embed competencies and content into their course syllabi and field placements, as well as within the organizational culture or implicit curriculum (Council on Social Work Education, n.d.).

Cheng (1994) proposed a structure of curriculum effectiveness (see Figure 2). Based on this structure, a curriculum is effective if it can interact appropriately with teachers' competence to facilitate teacher performance, to help students gain learning experiences that are congruent with personal characteristics, and to produce expected educational outcomes under the constraints of preexisting characteristics (i.e., national goals, school goals, school management, subject content, and educational technology and resources).

The structure suggests that the evaluation of curriculum effectiveness should include process and outcome criteria, such as teacher performance, student learning experience, and outcomes. The variables, which can be manipulated, changed, or developed to improve teacher performance and student learning experience and outcomes, are curriculum and teacher competence. This structure of curriculum effectiveness provides the theoretical framework for this study.

Smooth and successful curriculum change is enormously difficult and time-consuming, and it cannot be accomplished without the personal involvement of the implementer. Implementers must accept change on their own terms and according to their constructions of reality (Rogers, 2003). While many systems currently mandate

change from above, there is a need to find compromises which enable users to find their own meaning and ownership of new ideas. Teacher ownership can exist side-by-side with central initiative and direction, and ownership can be achieved jointly by both teachers and central administration (McBeath, 1995).

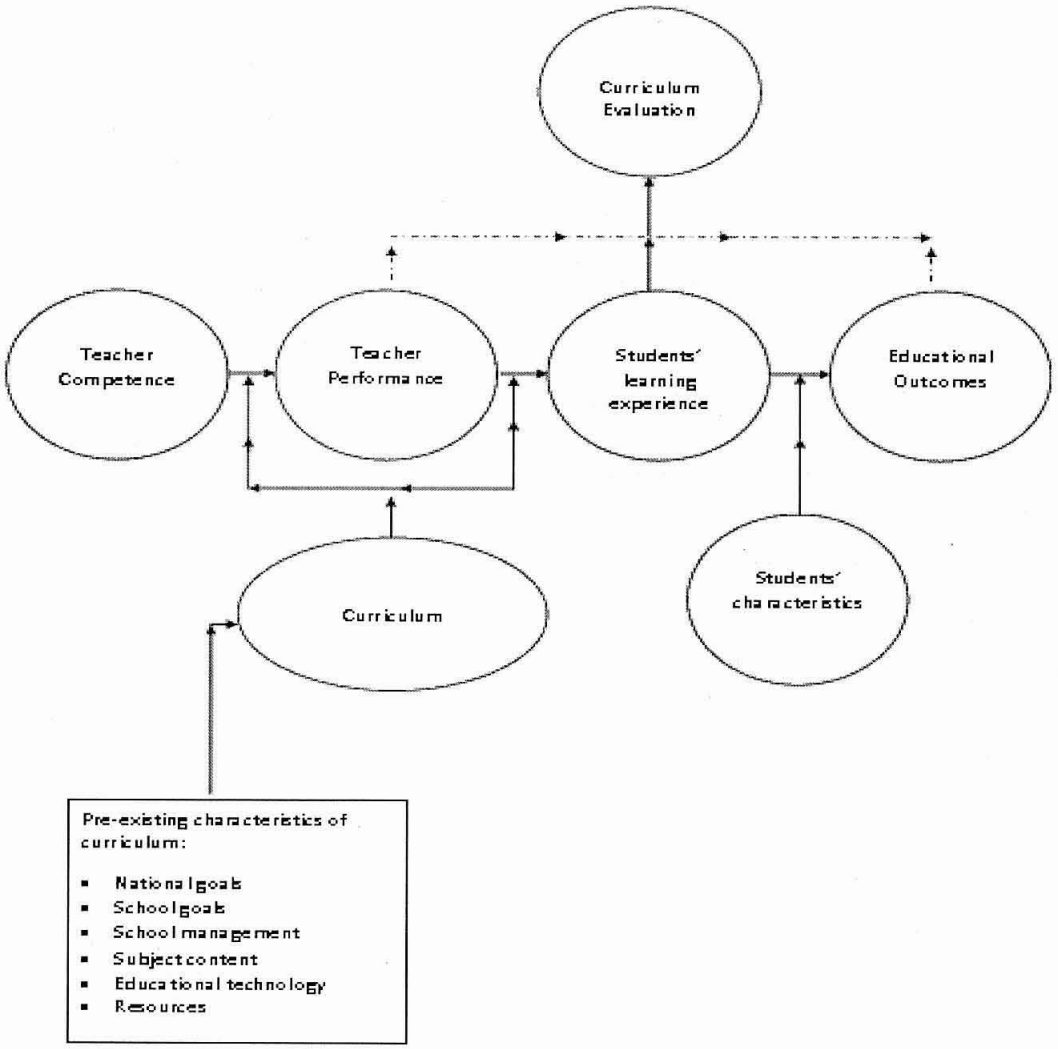

Figure 2. Schematic drawing of Cheng's structure of curriculum effectiveness model. Adapted from "Effectiveness of Curriculum Change in School: An Organizational Perspective" by Yin Cheong Cheng (1994, p. 27). Copyright 1994 by ProQuest Education Journals.

Higher education is a continuation of learning. Learning at the postsecondary level is theoretical and conceptual. It involves engagement, performance of the concepts presented, and commitment to understanding a new idea. Learning begins with student engagement which, in turn, leads to knowledge and understanding. Once someone understands, he or she becomes capable of performance or action. Critical reflection on one's practice and understanding leads to higher-order thinking, capacity to exercise judgment in the face of uncertainty, and ability to create designs in the presence of constraints and unpredictability. Ultimately, the exercise of judgment makes possible the development of commitment. These commitments make new engagements possible (Shulman, 2004). Dewey tied the goal of the school to the long-term transformation of the society. Part of this society is the collaborative relationship between teacher and learner (Olson, 2003).

The human race is a blend of many influences, such as social, racial, cultural, psychological, sociological, and even geographical influences. It cannot be avoided that each individual's unique traits affect learning. Gardner and Langworth (2004) argue that students learn in ways that are identifiably distinctive. The broad spectrum of students—and perhaps the society as a whole—would be better served if disciplines could be presented in a numbers of ways, and learning could be assessed through a variety of means. The learning styles are as follows:

- *visual-spatial* learners relate to physical space;
- *bodily-kinesthetic* learners use the body effectively through body language;
- *musical* learners show sensitivity to rhythm and sound;

- *interpersonal* learners learn best through interacting and building relationships with others;
- *intrapersonal* learners understand one's own interests and goals;
- *linguistic* learners have highly developed auditory skills and often think in words; and
- *logical-mathematical* learners think conceptually, abstractly, and are able to see and explore patterns and relationships (The Education Coalition, n.d.).

The EMS profession—whether one wants to become a paramedic or EMT—entails a high aptitude and dedication to the profession. Therefore, the focus of this applied document is to focus on the impact of EMS curriculum as it relates to reform in training and practice of EMS as a professional in the field of pre-hospital care.

Summary

This chapter presented a review of the relevant literature in relation to EMS educational programs and changes to allied health programs. Background information on the evolution of EMS programs introduced key historical data on why EMS programs are undergoing curricular and regulatory changes. Theories of outcome-based and problem-centered curricula were applied to the concept of curriculum change and pre-hospital care programs.

In Chapters 1 and 2, the background and theoretical foundation of the study were established. The methodology for the study is presented in Chapter 3. Results are presented in Chapter 4 and, in Chapter 5, the results are summarized and interpreted.

CHAPTER III: Method

The purpose of this study is to identify which educational elements make EMT-B programs successful. This researcher will discuss how the purpose of this study was carried out. First, this chapter will provide the reader with an overview of the methodological design of the study. Second, this researcher will describe the rationale and selection criteria for study participants. A section on data collection will delineate the specific procedures used for analyzing the data. Finally, a section will be dedicated to describing the trustworthiness of the research.

Design

Research studies that investigate the quality of relationships, activities, situations, or materials are referred to as qualitative research (Fraenkel, Wallen, & Hyun, 2012). The researcher replicated a qualitative study conducted in 2006, which identified the specific educational strategies used in EMT-B educational programs that have attained consistently high success rates on the NREMT examination (Margolis et al., 2008). This study was conducted in April 2014, in Tampa, Florida, after the implementation of the national EMS core curriculum and changes to the Florida statutes and administrative codes regulating EMS programs in the state. These changes were based on recommendations from the 2006 study.

Qualitative methodology was the most appropriate choice for this research because it allowed this researcher to listen to the views of the study participants; additionally, the first study utilized qualitative research methods.

Research question. The investigation sought to answer the following research question: What are specific strategies that lead to a successful EMT-B educational program?

This question was replicated from the national study conducted in 2006, which yielded responses that generated educational strategies for EMT-B programs (Margolis et al., 2008).

Nominal group technique (NGT). NGT is a special-purpose technique useful for situations where individual judgments must be tapped and combined to arrive at decisions which cannot be calculated by one person (Delbecq, Van de Ven, & Gustafson, 1975). It is a narrowing and decision-making method that allows the input of all group members, while minimizing group debate. It gives each person an equal voice to share and gather information (Education World, 2013). NGT was developed by Andre Delbecq and Andrew Van de Ven in 1968 (Delbecq et al., 1975). It is a structured group meeting, similar to a focus group, which adheres to a specific format and includes all participants' input. The most common applications of NGT are as follows: the identification of problems (i.e., helping generate the right research questions), the development of solutions, and the establishment of priorities for action. Van de Ven and Delbecq regarded NGT as a problem-solving method based on the development of a consensual depiction of the problem. NGT was used in the present study primarily as a means of problem clarification (Harvey & Holmes, 2012). The NGT process is particularly useful because it helps to identify problems or opportunities and sets priorities for extension programming.

Setting

The study was conducted during the state of Florida quarterly EMS Advisory Council meeting. The quarterly meeting was held in Tampa, Florida on April 30, 2014. In partnership with the State of Florida EMS Program Office (formerly known as the Bureau of EMS) and the Florida Association of EMS Educators (FAEMSE), an additional conference room was set up with two round tables, which accommodated four participants per table. Flip charts, preprinted worksheets, and 3 × 5 in. index cards were used to record the participants' answers. A voice recorder was used to account for the discussion portion of this focus group study.

Subjects

Participants for the study were selected using pass rate data obtained from the State of Florida EMS Program Office. This researcher also contacted the NREMT to obtain a second set of pass rates. The NRMET research office directed the researcher to the Florida EMS Program Office as the accurate source of EMT national exam pass rate data at the state level.

Fifteen institutions in Florida met the established inclusion criteria:

1. A training site had to have 5 years of complete data.
2. A training site had to have at least 40 students for 4 of 5 years.
3. A training site had to have a pass rate of at least 80% for first-attempt test takers for 4 of 5 years (using the reporting period from January 2009 to December 2013).

Two e-mail invitations were sent by this researcher to inform selected institutions about the research study. A follow-up e-mail was sent by Dr. Joe Nelson, and three

phone calls were scheduled and conducted as reminders to respond to the original announcement. Eight EMT programs sent a representative to the focus group study, which was conducted on April 30, 2014 in Tampa, Florida, in conjunction with the EMS Program Office quarterly meeting.

Demographic information, including gender, educational background, and years of experience as an instructor/administrator, was collected as part of the focus group participant information questionnaire. This questionnaire was distributed on April 30, 2014 to all participants (see Appendix A). All participants were program administrators or coordinators of EMT programs. This is valuable for the study as these individuals play a crucial role in the implementation and revision of the Florida statutes and administrative rules regulating the delivery of EMT programs. For the purpose of this study, participants were identified by the prefix EMS and a number (e.g., EMS1, EMS2, etc.).

Data Collection Procedures

This researcher gathered data using the NGT, a qualitative research method that utilizes small-group discussions to reach consensus. In NGT, information is gathered by asking individuals to respond to questions posed by a moderator; participants are asked to prioritize ideas or suggestions of group members (Centers for Disease Control and Prevention, 2006). The process allows the researcher to 1) manage the meeting and discussion; 2) keep the group working toward the task at hand; 3) ensure that everyone participates; and 4) set priorities and reach consensus on the goals, problems, solutions, or program suggestions proposed by the group (University of Idaho, 2008). All data gathered from participants was collected by the researcher with explicit permission and in

full compliance with Institutional Review Board guidelines. Appendix B includes a copy of the consent form distributed to focus groups.

The selection process was conducted using a single state. The following criteria, which were originally applied to the first study in 2006, were utilized to identify high-performing EMT-B educational programs:

1. A training site had to have 5 years of complete data.
2. A training site had to have at least 40 students for 4 of 5 years.
3. A training site had to have a pass rate of at least 80% for first-attempt test takers for 4 of 5 years (using the reporting period from January 2009 to December 2013).

Pass rates on the national NREMT EMT-B examination are published on the Florida EMS Program Office website. This researcher collected official pass rates from the EMS Program Office to ensure the accuracy of published rates. Program coordinators/directors meeting eligibility criteria were contacted by e-mail and asked to participate. In addition, a short presentation was given at the January 2014 EMS quarterly meeting by Dr. Nelson and this researcher. In partnership with the Florida EMS Program Office and the Florida Association of Emergency Medical Services Educators, an announcement was posted on the association's website. Follow-up e-mails signed by Dr. Joseph Nelson, State of Florida EMS Medical Director, emphasized the importance of the participants' knowledge of the EMT-B program and his or her contributions to the investigation.

Steps for conducting an NGT activity. The NGT protocol included the stages listed below.

1. Introduction and explanation
2. Silent generation of ideas
3. Sharing ideas
4. Group discussion and clarification
5. Voting and ranking

(Delbecq et al., 1975; Harvey & Holmes, 2012; Watkins, Meiers, & Visser, 2012)

Introduction and explanation. The facilitator for this study was the researcher. An information sheet was prepared containing the research question, its purpose, and the steps of the NGT procedures. A consent form was distributed to all participants during this step.

Silent generation of ideas. The participants were asked to work independently at this stage and to write as many ideas as possible in response to the research question on a sheet of paper. To promote open disclosure and increase response volume, participants were instructed to simply read a single response from their list without any rationale; they were instructed to not relate the response to other responses. They were asked to write ideas on a worksheet that they felt were pertinent to the topic.

Sharing ideas. Using a round robin process, all participants were invited to share and refine the ideas generated. The researcher recorded each idea on a flip chart using the participants' spoken words. The round robin process continued until all ideas were presented. Participants were encouraged to write down new ideas that arose from what others shared. This process ensured each participant the opportunity to make an equal contribution to the study.

Group discussion and clarification. This stage provided a serial discussion for the clarification of ideas. The researcher asked participants for a verbal explanation or further details about ideas produced by colleagues that were perceived to be unclear. The researcher's task was to ensure that each person contributed and that the discussion of ideas continued, without spending too long on a single idea. The participants were asked to suggest new items for discussion and to combine items into categories.

Voting and ranking. Participants were asked to independently rank ideas priority-wise. They were asked to give priority, beginning with the Number 1, to items they felt had helped maximize their academic achievement in higher education. All items were ranked. All rankings were collected and summed by the researcher for each item. An average ranking was calculated for each item.

Data Analysis Procedures

The qualitative evaluator relied on detailed knowledge of the processes and how processes affected participants. Analysis of data tends to identify recurrent themes and patterns which contribute to how the program is working (Weiss, 1998). NGT seeks a high level of abstraction and specificity from participants. The data collection method was able to generate precise technical language in response to an NGT question (Delbecq et al., 1975). It generated data early in the study (Mertler, 2012). This was accomplished by allowing the group to prioritize ideas democratically and by providing a greater sense of closure through constructive problem-solving (Centers for Disease Control and Prevention, 2006). Qualitative data give dynamic rather than static information (i.e., moving images instead of a few snapshots). They provide richness of detail by gathering evidence from various perspectives (Weiss, 1998). Steps 3 and 4 of NGT allowed the

researcher to conclude the data collection process with an on-site set of decisive recommendations from study participants.

The use of the NGT in this focus group facilitated the identification of the highest ranked elements or strategies that make EMT-B programs effective. This ranking and consensus of response aided the researcher to gather similarities or differences when comparing the results of the study to the results from the 2006 study (Margolis et al., 2008) conducted with EMS program coordinators and directors. Responses to the research question were categorized in structured format. The researcher used the voting and ranking process in NGT to discard and clarify discrepancies in the description of specific recommendations from participants. Responses to the research question were documented on paper and transcribed into a document was saved on a computer using a Windows-based word processing program. The researcher used responses in the focus groups, the information from the demographic survey, and data from the State of Florida EMS Program Office to report the results of the study. The researcher examined the recommendations from Florida EMT-B program directors and coordinators by comparing the results of the 2006 study (Margolis et al., 2008). Patterns, themes, and discrepancies were identified.

Limitations

This study was limited to Florida EMT-B programs with pass rates of 80% or higher on the NREMT EMT-B certification examination. Data was provided by the State of Florida Emergency Medical Services Program Office and the Florida Association of Emergency Medical Services Educators. Some institutions offering an EMS training program had not been able to fully implement the faculty credentialing rule.

CHAPTER IV: Results

According to the NHTSA (2007), EMTs' scope of practice includes basic, non-invasive interventions to reduce the morbidity and mortality associated with acute out-of-hospital medical and traumatic emergencies. Emergency care is based on assessment findings. An EMT's knowledge, skills, and abilities are acquired through formal education and training (NHTSA, 2007). This chapter presents the findings of the qualitative focus groups conducted during a quarterly EMS meeting with EMS educators and medical directors from Florida.

Summary of Analyses

Introduction and explanation. This researcher, who served as the facilitator, briefly explained the study objective and the steps of NGT. The welcome statement included the following components: (a) a cordial and warm welcome, (b) the importance of the group's task, (a) the importance of each member's contribution, and (d) the purpose of the study and how the data were to be utilized (Delbecq et al., 1975). The demographic questionnaire and the consent form were distributed to participants. Table 1 summarizes the data provided by the institutional representatives.

Silent generation of ideas. The participants were given a single worksheet with the research question. They were asked to write all ideas on a worksheet, without any particular order. The researcher stressed the importance of writing down strategies that the participants were using at their respective institutions. Appendix C displays the worksheet utilized by the participants for the focus group exercise.

Table 1

Demographics and Characteristics of Focus Group Participants

Characteristic	*n*	*M*	*SD*	Min	Max
Gender					
Male	5				
Female	3				
Age			1.53	20.00	80.00
Highest degree					
Associate's	1				
Master's	6				
Doctorate	1				
Program nationally accredited (CoAEMSP)					
Yes	7				
No	1				
Years teaching experience		24.13	9.03	8.00	34.00
Years EMS teaching experience		7.43	8.91	1.00	25.00
Average percent of time in:					
EMT instruction		33.00	29.52		
EMS instruction other than EMT		10.50	7.87		
Instruction other than EMS		1.25	2.31		
Administration		51.87	26.17		
Other		.63	1.76		
Qualified as Level A instructor					
Yes	8				
No	0				
Qualified as Level B instructor					
Yes	8				
No	0				
Number of lead EMT instructors		2.37	1.40	1.00	4.00
Number of lab/assistant EMT instructors		14.00	6.02	5.00	20.00
Students per year		149.12	93.36	48.00	360.00

Highest credential awarded to students upon completion of EMT coursework					
Diploma	8				
EMT program attrition rate		19.68	3.88	15.00	25.00

Note. $N = 8$.

Sharing ideas. Using a round robin process, participants were invited to share and refine their ideas. Each participant had the opportunity to make an equal contribution in responding to the research question. A total of 41 strategies were presented during this step of the NGT focus group. Table 2 reports the preliminary list of strategies generated by the focus group in response to the research question.

Group discussion and clarification. The researcher sought verbal explanations and further details from participants about ideas produced. The researched ensured the participation of each participant. The discussion was recorded in order to keep a verbal record of why the items listed were strategies that yielded highly successful EMT educational programs. A refined list of strategies generated by the focus group is presented in Table 3.

Voting and ranking. Once the focus group reached a consensus on the strategies that make an EMT program yield high first-time test taker pass rates, each participant was asked to rank the ideas independently. This researcher informed the focus group that this step of the NGT focus group entailed two exercises. The first exercise was to select 12 strategies that were considered crucial to the success of an EMT educational program, regardless of order of importance.

Table 2

List of Preliminary Strategies Yielding Highly Successful EMT Educational Programs

Strategy
1. Progression to critical thinking/application exercises
2. Pre-class reading
3. Pre-class recorded lecture
4. Videotape skills demonstrations
5. Skill practice homework
6. Lab skills validation
7. Lab scenario practice
8. Cognitive testing
9. Field experience
10. Clinical experience inclusive of communications skills
11. Pre-screen students for both academic skills and personality for the profession
12. Incorporate physical fitness
13. Employ educators with a balance of EMS experience and academic preparation
14. Blended learning
15. A, B, C class schedule
16. Hire instructors that are adult educators
17. High fidelity simulation in labs for high risk/low frequency skills
18. Only use highly effective educators in the classroom
19. Note taking and study skills workshop
20. Complete prerequisite courses
21. Move away from classic lecture
22. Instructor to student consistency
23. Solid curriculum
24. Required basic computer competency before EMT coursework
25. Active participation techniques
26. Professional development for faculty
27. Use testing method consistent with what is required at the state level
28. Diverse clinical experience
29. Use flip classroom technique
30. Recruit students with high science aptitude (skills and knowledge)
31. Item analysis with follow-up via cognitive exams
32. Every end-of-module exam must pass with 75% or higher
33. Well-equipped lab with the same equipment used in total system
34. Preceptor training
35. Scenario-based testing
36. Include students' expectations in the syllabus
37. Coordination of lab and classroom
38. Excellent library resources
39. Hands-on supervision by program director
40. Uniform policy with morning roll call and lineup
41. Strong medical director involvement

Table 3

List of Realigned Strategies Yielding Highly Successful EMT Educational Programs

Strategy
1. Progression to critical thinking/application exercises
2. Pre-class reading
3. Pre-class recorded lecture
4. Videotape skills demonstrations
5. Skill practice homework
6. Lab skills validation
7. Lab scenario practice
8. Cognitive testing
9. Field experience
10. Clinical experience inclusive of communications skills
11. Pre-screen students for both academic skills and personality for the profession
12. Incorporate physical fitness
13. Employ educators with a balance of EMS experience and academic preparation
14. Blended learning
15. Consistent primary instructor
16. Experienced educators with adult learning teaching techniques
17. High fidelity simulation in labs for high risk/low frequency skills
18. Only use highly effective educators in the classroom as evidenced by vetted observation rubric
19. Incorporate learning strategies and study skills workshop
20. Complete prerequisite courses
21. Move away from classic lecture
22. Instructor to student consistency
23. Solid curriculum
24. Required basic computer competency before EMT coursework
25. Active participation techniques
26. Professional development for faculty
27. Use testing method consistent with what is required at the state level
28. Diverse clinical experience
29. Use flip classroom technique
30. Recruit students with high science aptitude (skills and knowledge)
31. Item analysis with follow-up via cognitive exams
32. Every end-of-module exam must pass with 85% or higher
33. Well-equipped lab with the same equipment used in the field
34. Preceptor training
35. Scenario-based testing
36. Include students' and instructor's expectations in the syllabus
37. Coordination of lab and classroom
38. Excellent library resources
39. Hands-on supervision by program director
40. Uniform policy with morning roll call and lineup
41. Strong medical director involvement

Participants were asked to use a 3 × 5 in. index card for the exercise. Each participant placed the round-robin listing number of the selected strategy on the top left corner of the card. The entire strategy phrase or sentence was written in the middle of the card. The researcher recorded on a flip chart sheet (which was visible to each attendee) only the round-robin listing. Participant were then asked to place a stick mark by each selected strategy.

Upon completion of the exercise, the strategy with the highest number of stick marks was transferred to a blank flip chart sheet. Figure 3 displays the voting tally sheet.

1. III	21. II
2. I	22. IIIII
3.	23. II
4. I	24. I
5.	25. IIIII
6. II	26. II
7. II	27. I
8. I	28. IIII
9. II	29. I
10.	30.
11. I	31. II
12. II	32. IIIII
13. I	33. IIII
14. II	34. IIII
15. III	35. IIII
16. I	36.
17. II	37. IIIII
18. I	38.
19. I	39. I
20. III	40. I
	41. IIII

Figure 3. Voting tally sheet. Adapted from *Group Techniques for Program Planning: A Guide to Nominal Group and Delphi Processes* by Delbecq, Van de Ven, and Gustafson (1975). Copyright 1975 by Scott, Foresman and Company.

The top 12 strategies were identified by participants by selecting strategies with the highest number of stick marks. Table 4 illustrates the top 12 strategies identified by the focus group.

Using the same index cards, participants were asked to re-rank each of the 12 identified strategies. However, this time each ranking was by degree of importance. The second phase of this NGT step included a ranking of 1 to 5, with 1 considered the least important and 5 the most important strategy for a successful EMT program. A sample drawing of the index card vote used by each focus group participant is presented in Figure 4.

Table 4

List of Top 12 Strategies Yielding Successful EMT Educational Programs

Strategy
1. Progression to critical thinking/application exercises
2. Consistent primary instructor-
3. Complete prerequisite courses
4. Instructor to student consistency
5. Active participation techniques
6. Diverse clinical experience
7. Every end-of-module exam must pass with 85% or higher
8. Well-equipped lab with the same equipment used in the field
9. Preceptor training
10. Scenario-based testing
11. Coordination of lab and classroom
12. Strong medical director involvement

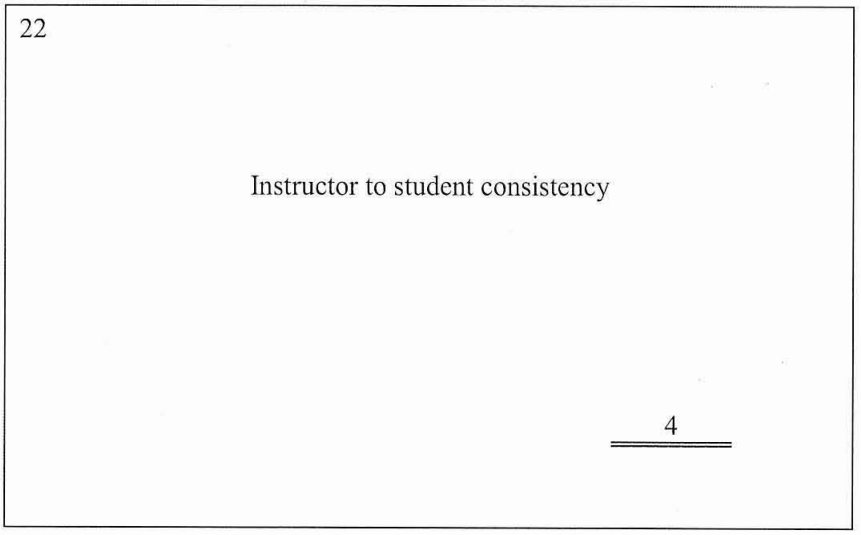

Figure 4. Sample drawing of a 3 × 5 in. voting and ranking card used by focus group participants to identify top strategies leading to highly successful EMT educational programs. Adapted from *Group Techniques for Program Planning: A Guide to Nominal Group and Delphi Processes* by Delbecq, Van de Ven, and Gustafson (1975). Copyright 1975 by Scott, Foresman and Company.

The final scores for the 12 listed strategies ranged from 9 to 35. Two items received a score of 9, and two items received a score of 17. This researcher repeated the discussion for the clarification step in order to re-rank the items. Two items were discarded from the list of top strategies. Table 5 lists the ranking and final score for each strategy. The final score helped participants and the researcher to identify the top five strategies yielding successful EMT educational programs.

An in-depth discussion of each of the five strategies was facilitated to provide this researcher with a detailed understanding of the major themes. Table 6 lists the top five strategies of highly successful EMT educational programs in Florida.

Table 5

Ranking of the Top 12 Strategies Yielding Successful EMT Educational Programs

Identified Strategy	Ranking	Total Score
Progression to critical thinking/application exercises	7, 5, 7, 5, 7, 4	35
Consistent primary instructor	4, 5, 2, 6, 6, 2	25
Complete prerequisite courses	7, 6, 4	17
Instructor to student consistency	6, 7, 5, 4	21
Active participation techniques	1, 2, 7, 1	11
Diverse clinical experience	1, 2, 3, 3, 3, 5	17
Every end-of-module exam must pass with 85% or higher	6, 1, 1, 4	12
Well-equipped lab with the same equipment used in the field	2, 1, 6	9
Preceptor training	2, 3, 4	9
Scenario-based testing	3, 4, 2, 4, 3, 2	18
Coordination of lab and classroom	5, 5, 2, 5, 3	20
Strong medical director involvement	7, 1, 6, 1	15

Final vote. In addition to the ranking scores for each strategy, participants were given the opportunity to rate the top five strategies in terms of importance. Using a scale of 0 to 10 (0 = *unimportant*, 10 = *very important*), each participant individually rated the strategies (see Appendix D). This final exercise exemplified the final vote in the NGT process. Table 7 ranks the level of importance for each strategy yielding a highly successful EMT educational program in Florida.

Table 6

Top Five Strategies by Ranking Order of Highly Successful EMT Programs in Florida

Strategy
1. Progression to critical thinking/application exercises
2. Consistent primary instructor
3. Instructor to student consistency
4. Coordination of lab and classroom
5. Scenario-based testing

Table 7

Ranking of the Top Five Strategies Yielding Successful EMT Educational Programs in Terms of Importance

Identified Top Strategy	Ranking	Average Score Level of Importance
Progression to critical thinking/application exercises	1	9.42
Consistent primary instructor	2	9.28
Instructor to student consistency	3	8.28
Coordination of lab and classroom	4	7.71
Scenario-based testing	5	9.00

Results from Research Question

There was one research question addressed in this study: What are specific strategies that lead to a successful EMT-B educational program? An in-depth discussion using the NGT focus group process allowed participants to compile five top strategies that yield highly successful EMT programs in Florida. The researcher obtained a detailed

understanding of the major themes of each strategy. Table 6 lists the top five strategies of highly successful EMT educational programs in the state of Florida.

Progression to critical thinking and application exercises. EMS education tends to be highly behavioristic, with clearly defined cognitive and psychomotor objectives (Margolis et al., 2008). The focus group felt that by assigning students to read the material prior to a class meeting, the instructor may engage students in more discussion. Although the concept of flip classroom was discussed by the participants, they agreed that teaching students how to exercise critical thinking skills through case studies and concept application via classroom discussion, instead of delivering a lecture in front of the classroom, is important in EMT training and education.

Consistent primary instructor. EMT instructors come to the classroom with a combination of the required academic credentials and practical experience. The focus group discussed several instructional models to accommodate instructors who are active EMS professionals. The focus group agreed with a model that allows students to be with the same instructor using the ABC schedule. On the ABC class schedule, students follow the shift of the assigned EMT instructor in order to maintain consistency in curriculum delivery and to build a relationship with the primary instructor.

Instructor to student consistency. Focus group participants shared that successful programs use EMS personnel as instructors. They bring to the classroom real life experience from their jobs. This is an essential complement to what students read in books. Academic preparation is important, and the state of Florida requires a minimum of an associate's degree to teach in an EMT education program. Using syllabi with

outlined expectations for the student and instructor and applying standard conceptual concepts to deliver the curriculum ensures consistency.

Coordination of lab and classroom. Having strong lab environment skills ultimately helps the classroom environment. Shifting knowledge into application allows the student to understand how to use information provided. The state of Florida still dictates that an EMT educational program must have a certain number of clock or contact hours. However, the focus group discussed how an individual program gets from Point A to Point B is up to the individual institution using the standard EMS curriculum.

Scenario-based testing. At the EMT-level of instruction, emphasis is placed on not only the knowledge base, but also an understanding of the knowledge. EMS professionals provide hands-on care to people with medical emergencies. In most cases, EMT programs are short, and a heavy load of information is given to students. The focus group agreed that students need to move quickly into a scenario simulation environment; the lab is an important component of the simulation environment in EMT programs. This type of learning environment prepares students for the NREMT certification exam. The NREMT EMT cognitive exam is a computer adaptive test (NREMT, n.d.).

Analysis of the Research Question

The 2006 study (Margolis et al., 2008), which addressed the same research question posed to participants in this study, yielded 12 instructional strategies of highly performing EMT programs. Table 8 presents the strategies selected by the 2006 focus group (Margolis et al., 2008).

Table 8

List of Top 12 Strategies Yielding Successful EMT Educational Programs – 2006 Study

Strategy
Select students who are highly motivated to succeed
Assure adequate institutional support
Administer multiple assessments of student progress throughout the class
Develop standardized lesson plans to be used when team teaching
Establish a passing standard that is above the minimum competency level
Hire qualified/certified instructors
Maintain effective communication between didactic, practical, and field instructors
Assure instructional consistency
Provide clearly defined objectives to students and instructors
Provide immediate feedback for written, practical evaluations to students
Require prerequisites prior to admission
Teach test-taking skills in class

The 2006 study included 10 participating institutions from different states within the United States. Twelve entities, nationwide, met the eligibility requirements. The focus group for this study included eight institutions from the state of Florida; 15 entities met the eligibility requirements. With a smaller group of participants, individuals are able to accurately rank or rate about five to nine priority items with reliable judgment (Delbecq et al., 1975). Therefore, this study incorporated an additional ranking phase , in order to accurately meet the prescribed NGT process for the number of participants.

Although the demographics of participants may have been slightly different, and this study was performed after the introduction of a national standard EMT curriculum, two of the five top strategies identified by the Florida participants were similar to strategies identified by program representatives of the 2006 research focus group: (1) consistent primary instructor and (2) instructor to student consistency. Both groups acknowledged the importance of a strong relationship between student and instructor. Both groups emphasized consistency in curriculum delivery through instructors with a combination of proper academic credentials and field experience.

Summary of Results

This study used Cheng's (1994) structure of curriculum effectiveness as its theoretical framework. Cheng's (2001) concept of effectiveness in teaching and learning argues that the key internal factors—teacher, curriculum, contextual, and student factors—are related to student learning experiences and educational outcomes. The model makes the following assumptions:

1. Student learning outcomes are the product of the interaction between curriculum characteristics, student learning experience, and individual characteristics.
2. Student learning experience is affected by teacher performance, curriculum characteristics, and classroom environment.
3. Teacher performance is determined by the interactions among teacher competence, curriculum characteristics, and school organizational environment.
4. External teacher education, school-based teacher education, and preexisting teacher characteristics can contribute to teacher competence.

> Teaching evaluation is based on the information from teacher performance, student learning experience, and learning outcomes; it can be used to facilitate the development of teacher competence through staff development activities. (Cheng, 1998; Medley, 1982)

These assumptions align with the top five strategies yielding highly successful EMT educational programs in Florida. This framework was also supported by strategies identified in the 2006 focus group, specifically as it relates to the student learning outcomes, curriculum characteristics, and student learning experience (Margolis et al., 2008).

Chapter V: Conclusions, Discussion, and Recommendations

Introduction

The purpose of this qualitative study was to identify strategies yielding highly successful EMT education programs. This study replicated the research question used in a 2006 study which hypothesized that the implementation of the identified strategies would improve programmatic pass rates on the NREMT credentialing exam (Margolis et al., 2008). The study supported the development of a national standard EMT curriculum, which was implemented in the state of Florida in 2010. This study was conducted after the adoption of the standard curriculum guidelines in Florida. The faculty credentialing requirement was of particular interest to this researcher. EMS instructors have been practitioners with the required licenses and certifications. The academic credentialing requirement was not common in the practice of hiring EMT instructors. This researcher hypothesized that the impact of the EMS program administrative rules would benefit student outcomes and place greater emphasis on curriculum effectiveness and delivery, with the instructor as the focus of delivering high performing EMT program completers.

Summary of Results

There was one research question addressed in this study: What are specific strategies that lead to a successful EMT-B educational program? An in-depth discussion using the NGT focus group process allowed participants to compile five top strategies yielding highly successful EMT programs in Florida. The researcher obtained a detailed understanding of the major themes of each strategy. The top five strategies of highly successful EMT educational programs in the state of Florida are listed below.

1. Progression to critical thinking/application exercises

2. Consistent primary instructor
3. Instructor to student consistency
4. Coordination of lab and classroom
5. Scenario-based testing

Discussion of Results

Two of the five top strategies identified by the Florida participants are similar to strategies identified by program participants in the 2006 research focus group: (1) consistent primary instructor, and (2) instructor to student consistency (Margolis et al., 2008).

Both groups acknowledged the importance of a strong relationship between student and instructor. Both groups emphasized consistency in curriculum delivery through instructors with a combination of proper academic credentials and field experience.

This study used Cheng's (1994) structure of curriculum effectiveness as its theoretical framework. Cheng's (2001) concept of effectiveness in teaching and learning argues that the key internal factors—teacher, curriculum, contextual, and student factors—are related to student learning experiences and educational outcomes. The model makes the following assumptions.

1. Student learning outcomes are the product of the interaction between curriculum characteristics, student learning experience, and individual characteristics.
2. Student learning experience is affected by teacher performance, curriculum characteristics, and classroom environment.

3. Teacher performance is determined by the interactions among teacher competence, curriculum characteristics, and school organizational environment.
4. External teacher education, school-based teacher education, and preexisting teacher characteristics can contribute to teacher competence.

   Teaching evaluation is based on the information from teacher performance, student learning experience, and learning outcomes; it can be used to facilitate the development of teacher competence through staff development activities. (Cheng, 1998; Medley, 1982)

These assumptions align with the top five strategies yielding highly successful EMT educational programs in Florida. This framework also supports the strategies identified by the 2006 focus group (Margolis et al., 2008).

Implications for Practice

The NGT focus group was an effective tool for use in this research study. The methodology allowed each participant to fully engage in discussions, ranking exercises, and voting processes. The criteria used to select the focus group participants were the same as those in the 2006 study (Margolis et al., 2008). Margolis et al. (2008) concluded that the participation of smaller programs with high pass rates was limited. In the state of Florida, EMT programs are delivered at private non-profit and for-profit institutions. EMT programs offered at state-funded institutions include state colleges and technical centers. In this study, publicly funded institutions and one technical center met the criteria to participate in the study. This study also yielded the participation of programs that award a certificate or diploma to EMT graduates. Degree programs did not meet the

criteria to participate in the study. Qualifying data was provided by the State of Florida EMS Program Office. The NREMT office did not provide additional data.

Recommendations for Future Research

Five specific strategies were identified by high-performing EMT programs. All recommendations included the instructor as the provider of effective delivery of the curriculum.

Of the 15 participants selected to attend the focus group, only eight participated in the study. It is recommended that the same study be conducted to increase the number of participants. It is also recommended that the criteria include 3 years of data instead of 5 to increase the number of institutions eligible to participate in a similar research study.

Summary

Limited studies and research on the effectiveness of the delivery of EMS curricula hinders the ability to hire good instructors, adopt the correct level of academic freedom in the classroom, and measure students' outcomes based on what the public and employers are demanding of pre-hospital care professionals. The State of Florida EMS Program Office recognizes that very few EMS personnel have a sufficient baseline understanding of the role of EMS educational research. This study validates the need to hire qualified faculty, with the proper academic credential and field experience, to teach EMT courses.

Implementation of the EMS national curriculum began with the revision of the EMT-B curriculum in Florida. The Florida EMS Program Office and training program directors have implemented state-mandated changes to the EMT-B curriculum, which embed the development of critical thinking skills for students and the requirement of hiring faculty with degrees to teach courses. This change in curriculum effectiveness

versus curriculum delivery is new to this field. Cheng's model places the teacher as the focus of achieving successful student learning outcomes. This study supports the hypothesis that high performing EMT instructors deliver a highly effective EMT program completer.

This researcher replicated a research question utilized in a national study conducted in 2006, which yielded responses that generated educational strategies for EMT-B programs (Margolis et al., 2008). Two important changes generated from the 2006 study were (a) revisions to the national EMT-B curriculum and (b) the introduction of faculty academic and experiential requirements for EMT-B and paramedic programs. This study identified five specific strategies of high-performing EMT programs. All recommendations include the instructor as the provider of effective delivery of the curriculum. This study validates the importance of identifying qualified instructors with the appropriate academic credential and field experience to train and educate emergency medical technicians.

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APPENDIX A

EMS Research Study

Demographic Information Questionnaire

ID #_____ Date_____

1. Gender: ____ Male ____ Female

2. Age: ____ 20-30 ____ 31-40 ____41-50 _____51-60 ____ 61-70 ____ 71-80

3. Highest Educational Level: _____

4. Years of teaching experience: _____

5. Years EMS teaching experience: _____

6. Is your program nationally accredited (CoAEMSP)? _____ Y _____ N

7. Years as EMS Program Administrator/Coordinator: _____

8. Years as EMS Program Administrator at present institution: _____

9. Average percent of time spent in:

   EMT instruction: _____

   EMS instruction other than EMT: _____

   Instruction other than EMS: _____

   Administration: _____

   Other: _____

10. Are you qualified as a level A instructor? _____ Yes _____ No

11. Are you qualified as a level B instructor? _____ Yes _____ No

12. Number of lead EMT instructors: _____

13. Number of lab/assistant EMT instructors: _____

14. Average number of students per year? _____

15. Highest credential awarded to students upon completion of the EMT-B coursework?

___ Diploma

___ Associate's Degree

16. EMT program attrition rate: _____

APPENDIX B

CONSENT TO PARTICIPATE IN A RESEARCH STUDY

TITLE: The Impact of the National EMS Curriculum in Florida's EMT-B Educational Programs

PRINCIPAL INVESTIGATOR: Ilia Y. Matos, Lynn University, Boca Raton, FL

PURPOSE: The main purpose of this study is to identify which educational elements make EMT-B programs successful. A replica of a national qualitative study conducted in 2006, this is the first study that is being conducted after the implementation of the national EMS core curriculum and changes to the Florida statutes and administrative codes regulating EMS programs in the state.

YOUR PARTICIPATON: We are inviting you to participate in this short project because of your role as a program administrator/faculty.

RISKS AND BENEFITS: Participation in this study is not intended to harm you. However, you may be inconvenienced providing us with your time. Your answers from the questionnaire and participation in the focus group using the nominal group technique (NGT) will be kept confidential. This research is not designed to help you personally, but the results will contribute to the further understanding of what key elements or factors contribute to high- performing EMT-B programs in the state of Florida.

COMPENSATION: There will be no compensation for your participation.

CONFIDENTIALITY: You will be asked to answer one question, and the discussion will be recorded on paper. If necessary, some portions of the discussion may be voice recorded. I will take every step possible to ensure the confidentiality of your participation. In addition, all participants will be asked to keep confidential what is shared during the focus group discussion.

First, you will be asked to complete a written demographic questionnaire. Second, notes from the nominal group technique discussion will recorded on large pieces of paper, 3 × 5 cards and worksheets. During the discussion step of the nominal group technique discussion, the investigator may use voice recorder. All notes and recordings will be kept by the investigator/researcher. I guarantee non-identifiability of all personal information and any third party information in all transcripts, data spreadsheets, reports and papers. The investigator will save all notes from the worksheets and summaries from the discussion on a password-protected computer and will lock paper copies in a cabinet to which only we have access. Finally, data will be kept after all possible publications/articles have been generated from the work (approximately 6 months). After that time, data will be destroyed— transcriptions and notes shredded, computer files deleted.

RIGHT TO WITHDRAW: Your participation in this project is completely voluntary. You may choose not to take part at all. If you decide to participate in this research, you may stop participating at any time and may request that your interview be deleted and transcriptions be destroyed. If you decide not to participate in this study or if you stop participating at any time, you will not be penalized or lose any benefits to which you otherwise qualify.

SUMMARY OF RESULTS: You may ask to see a summary of results from this research project upon its completion in June 2014.

VOLUNTARY CONSENT: I have read the above statements and understand what is being requested of me. I also understand that my participation is voluntary and that I am free to withdraw my consent at any time, for any reason. On these terms, I certify that I am willing to participate in this research project. I understand that should I have any further questions about my participation in this study, I may call Ilia Y. Matos at [redacted] or [redacted].

SIGNATURES: Both the researcher and subject should sign, and each should hold a copy with original signatures.

Participant's Signature Date	Researcher's Signature Date

APPENDIX C

NGT Research Question Worksheet

What are specific strategies that lead to a successful EMT-Basic educational program?

APPENDIX D

Rating Form for NGT Final Voting

Specific Strategies That Lead To A Successful EMT Educational Program

1. Choose the five most important items from the flip chart and list them in rank-order below
2. Identify the items by using the number and description from the flip chart
3. Rate each item in terms of its importance on the 0 – 10 scale, with **0** being **Unimportant** and **10** being **Very Important**

No. from flip chart	Item Description	Relative Importance (please circle one)
		1 2 3 4 5 6 7 8 9 10
		1 2 3 4 5 6 7 8 9 10
		1 2 3 4 5 6 7 8 9 10
		1 2 3 4 5 6 7 8 9 10
		1 2 3 4 5 6 7 8 9 10
		1 2 3 4 5 6 7 8 9 10
		1 2 3 4 5 6 7 8 9 10